

WHAT IS CLAIMED IS:

1. An image sensor comprising:

a plurality of photoelectric converter elements each operable to convert an optical signal into an electric signal;

a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal; and

a resolution setting portion operable to receive a resolution setting timing signal, a first resolution setting signal and a second resolution setting signal, and to select one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor.

2. The image sensor according to claim 1, further comprising a shift register circuit operable to selectively turn on and off said plurality of channel selector switches in the on-off control pattern selected by said resolution setting portion, and wherein said resolution setting portion receives said resolution setting timing

signal and said first and second resolution setting signals from an external device, said resolution setting timing signal and said first and second resolution setting signals being selected from a group consisting of a control signal for setting said image resolution value, a start signal for starting said shift register circuit, and said clock pulse signal.

3. The image sensor according to claim 2, wherein said resolution setting timing signal is one of said control signal and said clock pulse signal, and said resolution setting portion prevents said start signal from starting said shift register circuit for a predetermined length of time after a moment of said the rising or falling of said resolution setting timing signal.

4. The image sensor according to claim 1, wherein said resolution setting portion is operated to set said image resolution value before each line of image is read by operation of said plurality of photoelectric converter elements and said plurality of channel selector switches.

5. The image sensor according to claim 1, wherein said resolution setting portion is operated to set said image resolution value before each page of image is read by operation of said plurality of photoelectric converter elements and said plurality of channel selector switches.

6. The image sensor according to claim 2, wherein said shift

register circuit is operable to simultaneously turn on a plurality of adjacent switches of said plurality of channel selector switches, when said image resolution value set by said resolution setting portion is other than a highest one of a plurality of image resolution values available by an operation of said resolution setting portion, the number of said adjacent switches varying depending upon the image resolution value set by said resolution setting portion.

7. The image sensor according to claim 1, wherein the electric signals generated as image signals by the electric signals generated by said plurality of photoelectric converter elements are accompanied by an image resolution signal indicative of the image resolution value set by said resolution setting portion.

8. The image sensor according to claim 1, wherein the number of said plurality of on-off control patterns of said plurality of channel selector switches is equal to a multiple of four, and said plurality of on-off control patterns correspond to respective different values of the image resolution of the image sensor.

9. An image sensor comprising:

- a plurality of photoelectric converter elements each operable to convert an optical signal into an electric signal;

- a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output

portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal; and

a resolution setting portion operable to receive a first resolution setting signal and a second resolution setting signal, before said plurality of channel selector switches are selectively turned on to connect said output portions of the corresponding photoelectric converter elements to said common signal line, said resolution setting portion being operable to select one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of said first and second resolution setting signals, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor.

10. An image sensor comprising:

a plurality of photoelectric converter elements each operable to convert an optical signal into an electric signal;

a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with said clock pulse signal;

a shift register circuit operable to selectively turn on and off said plurality of channel selector switches; and

a resolution setting portion operable to receive a first resolution setting signal and a second resolution setting signal, and to select one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of said first and second resolution setting signals, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor,

wherein said shift register circuit is operable to simultaneously turn on a plurality of adjacent switches of said plurality of channel selector switches, when said image resolution value set by said resolution setting portion is other than a highest one of a plurality of image resolution values available by an operation of said resolution setting portion, the number of said adjacent switches varying depending upon the image resolution value set by said resolution setting portion.

11. The image sensor according to claim 10, wherein said shift register circuit (28) is operable to turn on successive groups of the channel selector switches each group consisting of said plurality of adjacent switches, in synchronization with respective successive pulses of said clock pulse signal, when the image resolution value set by said resolution setting portion (31) is other than the highest value.

12. An image reading device comprising:  
an image sensor as defined in claim 1;

a resolution-setting-timing-signal generating portion operable to generate said resolution setting timing signal;

a first resolution-setting-signal generating portion operable to generate said first resolution setting signal;

a second resolution-setting-signal generating portion operable to generate said second resolution setting signal; and

a control portion operable to control said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions.

13. The image reading device according to claim 12, wherein said image sensor further comprises a shift register circuit operable to selectively turn on and off said plurality of channel selector switches in the on-off control pattern selected by said resolution setting portion, and wherein said resolution setting timing signal and said first and second resolution setting signals which are respectively generated by said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions are selected from a group consisting of a control signal for setting said image resolution value, a start signal for starting said shift register circuit, and said clock pulse signal.

14. The image reading device according to claim 13, wherein said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions generate said control signal, said start signal and said clock pulse

signal, respectively, and said control portion controls the on-off states of said start signal and said clock pulse signal upon at least one of rising and falling of said control signal.

15. The image reading device according to claim 13, wherein said resolution setting timing signal is one of said control signal and said clock pulse signal, and said shift register circuit is not started by said start signal for a predetermined length of time after a moment of said the rising or falling of said resolution setting timing signal.

16. The image reading device according to claim 13, wherein said resolution-setting-timing-signal generating portion generates one of said control signal and said clock pulse signal, as said resolution setting timing signal, and said control portion controls one of said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions to generate said start signal again, to start said shift register circuit, after said image resolution value is set by said resolution setting portion.

17. The image reading device according to claim 12, wherein said resolution setting portion is operated to set said image resolution value before each line of image is read by operations of said plurality of photoelectric converter elements and said plurality of channel selector switches.

18. The image reading device according to claim 12, wherein said resolution setting portion is operated to set said image resolution value before each page of image is read by operation of said plurality of photoelectric converter elements and said plurality of channel selector switches.

19. The image reading device according to claim 12, wherein said shift register circuit is operable to simultaneously turn on a plurality of adjacent switches of said plurality of channel selector switches, when said image resolution value set by said resolution setting portion is other than a highest one of a plurality of image resolution values available by an operation of said resolution setting portion, the number of said adjacent switches varying depending upon the image resolution value set by said resolution setting portion.

20. The image reading device according to claim 19, wherein said shift register circuit is operable to turn on successive groups of the channel selector switches each group consisting of said plurality of adjacent switches, in synchronization with respective successive pulses of said clock pulse signal, when the image resolution value set by said resolution setting portion is other than the highest value.

21. The image reading device according to claim 20, further comprising a feeding device operable to move a row of said photoelectric converter elements and an original carrying an



image, relative to each other in a direction perpendicular to a direction of extension of said row, at a speed which increases with an increase in the number of said plurality of adjacent switches.

22. The image reading device according to claim 12, wherein image signals generated by the electric signals generated by said plurality of photoelectric converter elements are followed by an image resolution signal indicative of the image resolution value set by said resolution setting portion.

23. The image sensor according to claim 12, wherein the number of said plurality of on-off control patterns of said plurality of channel selector switches is equal to a multiple of four, and said plurality of on-off control patterns correspond to respective different values of the image resolution of the image sensor.

24. The image reading device according to claim 12, wherein said resolution-setting-timing-signal generating portion is operable to change a moment of rising or falling of said resolution setting timing signal, depending upon said image resolution value to be set by said resolution setting portion, while said first and second resolution-setting-signal generating portion is operable to generate said first and second resolution setting signals such that a pulse of each of said first and second resolution setting signals rises and falls at respective predetermined fixed first and second moments relative to said

moment of rising or falling of said resolution setting timing signal.

25. The image reading device according to claim 12, wherein said first and second resolution-setting-timing-signal generating portions are operable to change a moment of at least one of rising and falling of each of said first and second resolution setting signals, depending upon said image resolution value to be set by said resolution setting portion, while said resolution-setting-timing-signal generating portion is operable to generate said resolution setting timing signal such that a pulse of said resolution setting timing signal rises and falls at respective predetermined fixed moments.

26. The image reading device according to claim 25, wherein said first and second resolution-setting-signal generating portions are operable to change the moment of falling of each of said first and second resolution setting signals relative to the moment of falling of said resolution setting timing signal.

27. The image reading device according to claim 25, wherein said first and second resolution-setting-signal generating portions are operable to change the moments of rising and falling of each of said first and second resolution setting signals relative to the moments of rising and falling of said resolution setting timing signal.

28. The image reading device according to claim 25, wherein said first and second resolution-setting-signal generating portions are operable to change the moments of rising and falling of each of said first and second resolution setting signals relative to moments of falling of two successive pulses of said resolution setting timing signal.

29. An image reading device comprising:

- a plurality of photoelectric converter elements each operable to convert an optical signal into an electric signal;

- a signal generating portion operable to generate a start signal and a clock pulse signal;

- a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with said clock pulse signal;

- a shift register circuit operable to selectively turn on and off said plurality of channel selector switches, said shift register circuit being started by said start signal; and

- a resolution setting portion operable to receive said start signal and said clock pulse signal, and to select one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of said start signal and said clock pulse signal, said plurality of channel selector switches being selectively turned on and off in the selected on-off control

pattern, to set an image resolution value of the image sensor.

30. A method of setting an image resolution of an image sensor comprising a plurality of photoelectric converter elements each operable to convert an optical signal into an electric signal, and a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal, said method comprising the steps of:

generating a resolution setting timing signal, a first resolution setting signal and a second resolution setting signal; and

selecting one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor.

31. The method according to claim 30, wherein said image sensor further comprises a shift register circuit operable to selectively turn on and off said plurality of channel selector switches in the on-off control pattern selected by said resolution setting portion, and wherein said resolution setting timing signal

and said first and second resolution setting signals are generated from an external device, and selected from a group consisting of a control signal for setting said image resolution value, a start signal for starting said shift register, and said clock pulse signal.

32. The image sensor according to claim 30, wherein the number of said plurality of on-off control patterns of said plurality of channel selector switches is equal to a multiple of four, and said plurality of on-off control patterns correspond to respective different values of the image resolution of the image sensor.